Amendments to the Drawings

The sheet of drawings attached in the Appendix is a new sheet including new Fig. 7.

Attachment: New Sheet(s)

REMARKS

Applicants have received and reviewed an office action dated December 11, 2007. By way of response, Applicants have canceled claims 1-22 and present new claims 23-47. Claims 27-47 generally correspond to claims 2-22. Claims 23-47 are currently pending. No new matter has been inserted. Applicants respectfully submit that the newly presented claims are supported by the specification as filed.

Newly presented claims 23 and 24 include subject matter from canceled claim 1. Claim 23 is supported throughout the specification as filed including at least at page 5, lines 3 to 6, page 9, lines 4 to 6 as well as lines 9 to 14. Claim 24 is supported throughout the specification as filed including at least at page 12, lines 12 to 13 and 15 to 16, as well as page 13, lines 5 to 6.

Claim 25 recites a spiral formation. Support for this recitation can be found throughout the specification as filed including at least at the disclosure of the use of two types of spiral formations, i.e. a spiral rib and a spiral groove for transporting particles in a spiral fashion (see page 9, lines 8 to 9, and page 10, lines 4 to 8, as well as original claim 16). Having thus disclosed a preferred formation (a rib) and also having disclosed an alternative to the preferred formation (a groove) support that the use of a *formation* is necessary to cater for both embodiments.

Claim 26 is supported throughout the specification as filed including at least at page 9, lines 7, 9 to 14, and page 10, lines 4 to 6. Claim 36 is supported throughout the specification as filed including at least at page 17, lines 8 to 10.

Applicants respectfully submit that the newly presented claims are in condition for allowance, and notification to that effect is earnestly solicited.

Drawings

The Examiner objected to the drawings under 37 CFR 1183(a) as not showing every feature of the invention specified in the claims. The Examiner asserted that either the features of a groove or the respective troughs must be shown or the features canceled from claims 16-20.

New Fig. 7 has been added; and the specification has been amended at page 6 to incorporate reference to Fig. 7. New Figure 7 depicts a groove as it would appear on the belt of the invention and is shown by reference numeral 50. Applicants respectfully submit that this drawing is fairly based on matter disclosed throughout the specification, and for instance on

original claim 16. It is our further submission that the introduction of this additional drawing does not introduce new matter into the specification as originally filed.

Accordingly, Applicants respectfully request withdrawal of the objection to the drawings.

Claim Objections

The Examiner objected to claims 1-22 for minor informalities. Although this objection has not been raised against the newly presented claims, it is discussed insofar as it might apply. Applicants respectfully traverse this objection.

Claims 23-47 do not include the formatting features objected to in the Office Action.

Accordingly, Applicants respectfully request withdrawal of this objection.

Rejection of Claims Under 35 U.S.C. § 112, First Paragraph

The Examiner rejected claims 1-9 under 35 U.S.C. § 112, first paragraph, in an enablement rejection. Although this rejection has not been raised against the newly presented claims, it is discussed insofar as it might apply. Applicants respectfully traverse this rejection.

Applicants respectfully submits that the description of the apparatus in use is clear and concise. On page 18 of the specification, the applicant describes operation of the apparatus as follows: Heavy particles, defined as particles having a size of less than one inch [spec p 18/l 12] is fed along chute 24 in the direction indicated by reference numeral 24.1. These particles are fed onto the belt 18 in the direction indicated by reference numeral 24.2 [spec p 18, l 14-15]. The belt 18 rotates in a direction indicated by reference numerals 12.1 and 18.1 spec p 18, l 16 – 18] by rotation of the roller 12.

Water is introduced onto the belt 18 using water nozzles 22.1 located on pipe 22. The water is sprayed downwardly onto the belt and in a direction opposite to the flow of particles 18.1 [spec p 19, l. 1 – 3]. The apparatus 10 is tilted at the end of the belt 18 where reference numeral 18.3 is located, in a manner where that end is raised out of the plane of the paper [spec p 19/ lines 4 – 5]. In addition, water from the water nozzles 22.1 is sprayed in an opposite direction to the direction of movement of the belt 18 and indicated by reference numeral 18.1.

Given the aforegoing and bearing in mind the concave shape of the belt 18 as illustrated in Figure 2, water moves against the direction of flow of particulate matter (i.e. against the direction indicated by reference numeral 18.1) and also flows in the direction indicated by

reference numeral 18.2. In doing so, light particles are carried off in the direction 18.2 as they have become fluidised (see amended claim 1), while heavy particles are moved in the direction indicated by reference numeral 18.3, by virtue of the operation of belt 18. Therefore, light particles and heavy particles are separated in the manner as described and are collected in collection trays (or the like) at opposite ends of the belt 18. This is clear from a reading of the specification and *a fortiori*, will be clear to a person skilled in the art.

The examiner is thus correct in stating that material separates in a direction opposite to the direction indicated by reference numeral 18.1, and then in turn, by reference numerals 18.2 and 18.3. These directions do not conflict, but rather work in concert to maximise retention time of the particles, as well as to improve separation of heavy particles. The specification is not unclear or contradictory.

Accordingly, Applicants respectfully submit that the newly presented claims fully comply with section 112, first paragraph, and withdrawal of this rejection is respectfully requested.

Rejection of Claims Under 35 U.S.C. § 112, First Paragraph

The Examiner rejected claims 1-9 and 17-20 under 35 U.S.C. § 112, second paragraph. The Examiner objected to certain terms and phrases employed in the claims. Although this rejection has not been raised against the newly presented claims, it is discussed insofar as it might apply. Applicants respectfully traverse this rejection.

Newly presented claims 23-47 do not include the terms and phrases objected to by the Examiner.

The newly presented claims recite an effective pitch and an effective texture. Applicants respectfully submit that this is clear to a person working in this art. The reason for this is that the degree of tilt, as well as the quantum of water to be used, (and rate of water to be introduced onto the belt) can only be ascertained by an operator of the apparatus in order to determine the optimum output of the mineral sought to be separated. Additional variables that need to be taken into consideration include particle size and nature. This is further illustrated by way of example. If one intends separating particles of a size 1 inch or smaller, according to a preferred embodiment of the invention, a rib of suitable pitch, water in an effective quantity and an effective degree of tilt will have to be used. Using the same size rib, for instance may well be

ineffective for particles that are smaller, or particles that are much larger. By way of further example, using too much water will wash the particles down in direction 18.2, when these particles may well be intended to be separated in direction 18.3. Additionally, the introduction of sufficient water may be rendered ineffective if the angle of tilt is too acute. It is thus clear that optimum separating conditions are to be (and are best) determined by using ordinary trial and error. While these facts are not expressly disclosed in the specification, it is well known to those skilled in the art. Further, the examiner's attention is drawn to page 10, lines 12 to 16 where this aspect is briefly touched upon.

Accordingly, Applicants respectfully submit that the newly presented claims fully comply with section 112, second paragraph, and withdrawal of this rejection is respectfully requested.

Prior Art Rejections

The Examiner rejected claims 1, 5, 10, 11, 13-19 and 22 under 35 U.S.C. § 102(b) as anticipated by Blake, US 964,083. The Examiner rejected claims 2-4, 6-9, 12, 17-18 and 20-21 under 35 U.S.C. § 103(a) as obvious over Blake in view of Rohr et al., US 6,059,120 and Newman et al., US 4,962,858. Although these rejections have not been raised against the newly presented claims, they are discussed insofar as they might apply. Applicants respectfully traverse these rejections.

US 964,083 (hereinafter "Blake"), it is respectfully submitted, does not anticipate the invention for the reasons which follow. Newly presented claim 23 includes features of a *variable concave profile* of a transversely operated belt that is moved in a direction that is transverse to the movement of particles subject of separation. Blake does not disclose a variable concave belt and in fact requires the belt to remain in its concave profile, failing which, the apparatus will become ineffective. This feature is thus sufficient to establish novelty of the present invention over Blake. A further distinguishing feature of the present invention in contrast to Blake, relates to the present invention separating particles at exit points that are disposed of at 180° relative to each other, whereas Blake separates particles at exit points that are disposed of at 90° relative to each other.

Furthermore, the examiner attempts to persuade the applicant that Blake is capable of having idler rollers being adjustable in a vertical direction in order to manipulate the profile of

the concave belt. However, with respect, this argument advanced by the examiner is tainted by the inappropriate and impermissible use of hindsight. Furthermore, this argument should rather be in the objection dealing with obviousness. Considerations of anticipation are limited to what appears on the document under scrutiny and not what the examiner deems fit to read into the prior art document.

Furthermore, by the examiner's own admission (*cf Detailed Action page 6, last paragraph*) the learned examiner admits that the present invention can be distinguished from Blake in that the invention teaches "*a preliminary separation stage, including the steps of adding water to the feed material, scrubbing, size classification and transportation to the primary separation stage and a differential transportation step designed to separate heavy, medium and light particles before introduction to the primary separation stage and a secondary separation stage...*".

Notwithstanding the above, Applicants respectfully submit that the invention provides additional novel features relative to the prior art, and these will be illustrated to the learned examiner as an introduction to the argument in respect of inventive step.

A first novel feature of the present invention has been described in paragraph 2.16.1 above.

A second novel feature of the present invention is a single spiral formation, preferably in the form of a rib, wherein the spiral formation is in the form of a continuous spiral. Blake, in contrast, expressly provides a belt with a series of parallel or substantially parallel grooves running obliquely to the direction of travel of the belt (Blake par 43 – 46). This, with respect, does not teach a single spiral rib as does the present invention.

A third novel feature of the present invention is that separation of particles occurs at 180° relative to each other, while Blake teaches separation of particles at right angles to each other.

Further features of the invention that distinguishes the present invention from Blake include the fact that the tiltable angle of the Blake apparatus is different to the tiltable angle of the present invention. Further, Blake describes a pair of idler rollers located on the operatively upper surface of the belt, while the present invention has a plurality of idler rollers which are adapted to adjust the concave profile of the belt, and which are located on the operatively lower surface of the belt.

The examiner seeks to sustain the argument against inventive step against at least three novel and distinguishing features that the present invention provides. The sum and/or combination of these three distinguishing features not only provide novelty, but also inventiveness, it is submitted, of the present invention over the cited prior art. It should be noted at this point that none of the prior art cited teaches or suggests any of the novel features as aforementioned.

The utility of having a variable concave belt profile should not be under-estimated. In fact, this feature of the invention increases the efficiency and therefore the profitability of such recovery systems. A further advantage of this feature of the invention is that water usage is reduced. This is especially important in the global environmental context that we find ourselves in, and which the likes of Blake were not subject to. This is a further argument that underpins the inventiveness of the present invention. By way of illustrative example, if a user of the present invention were to introduce particles that could be separated using the profile configuration of Figure 5, less water would be utilised as opposed to the configuration of Figure 4 (see page 21, lines 10 – 11). Figure 4 represents the profile a user would have to necessarily employ where a maximum capacity is required (see spec page 17, line 5).

None of the prior art documents cited by the examiner reveals a belt having a variable concave profile. None of these prior art documents suggest the use of such an improvement over existing prior art models.

US 6,059,120 (Rohr) teaches the use of baffle plates and metal sheets and therefore also teaches away from the use of a variable concave profile belt, as does the present invention.

US 4,962,858 (Newman) discloses a belt designed with the intention of having a straight profile, as opposed to a variable concave one. This is clearly evident from Figure 2. Further, the belt is described as being a flexible rubber conveyor belt (cf column 5, line 32 – 33). Therefore, Newman does not allude a person skilled in the art to employ a variable concave profile belt as does the present invention.

At the time of filing the present invention, there was a need in the art to provide a heavy particle separator that could increase retention time of particles subject of separation, and further to minimise water consumption and at the same time to increase the efficiency and hence profitability of such recovery systems. The current invention in respect of both the claimed method and the claimed apparatus addresses this need in the art or at least partially alleviates the

disadvantages associated with the known prior art apparati or alternatively provides an new and useful improvement of prior art apparati, by providing a variable concave profile in a transversely operable belt, which is operated transverse to the direction of movement of the particles subject to separation. This in effect increases retention time and provides a more accurate scrubbing and repetitive density assessment of particles, thereby affording a higher yield of heavy particles under separation. Clearly, the present invention is both novel and inventive over the prior art. Had the opposite been true, the applicants submit that the question why it had not been done prior to the filing date of the present invention would be a difficult question to answer in the absence of an acknowledgement of inventiveness.

In light of the aforementioned, Applicants respectfully submit that the invention as described and claimed is both novel and nonobvious, and therefore requests that the application be accepted.

Summary

In view of the above amendments and remarks, Applicant respectfully requests a Notice of Allowance. If the Examiner believes a telephone conference would advance the prosecution of this application, the Examiner is invited to telephone the undersigned at the below-listed telephone number.

Please charge any additional fees or credit any overpayment to Merchant & Gould P.C., Deposit Account No. 13-2725.

Respectfully submitted,

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Date: 11 June '08

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